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EXAMINER	
GARCIA, SANTIAGO	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/534,143	NAGASAKA, HIROYUKI	
	Examiner	**Art Unit**	
	SANTIAGO GARCIA	4147	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _21 June 2006_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-11_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-11_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _9/26/08 and 01/07/08 and 05/05/06_.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to because figure 31 is not labeled as “Prior Art”.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 1-6 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2, 4-5, 7 and 8 of U.S. Patent No. 7,359,425 to Yoshio Wada in view of patent number 5,533,010 to Tanaka. Although the conflicting claims are not identical, they are not patentably distinct from each.

Application Claim 1, and US patent claim 1 are both drawn to the same invention, i.e. an ultra wideband radio transmitter. These claims differ in scope in that application claim 1 with additional limitations, i.e., a local oscillator for outputting a local signal for frequency-converting a corresponding addition signal at a high frequency band or a low frequency band; a mixer for receiving the addition signal and the local signal, and frequency-converting the corresponding addition signal; and an antenna for receiving the frequency-converted addition signal and radiating the corresponding signal in the air, is narrower in scope than US patent claim 1.

Tanaka discloses a local oscillator for outputting a local signal for frequency-converting a corresponding addition signal at a high frequency band or a low frequency band (Tanaka, (6) “and at 135 a local oscillator for outputting a signal to the mixer circuit above or other components”); a mixer for receiving the addition signal and the local signal (Tanaka, fig.3 Mixer 133.), and frequency-converting the corresponding addition signal (Tanakafig.3 shows a connection from local oscillator 135 to mixer 133); and an antenna for receiving the frequency-converted addition signal and radiating the corresponding signal in the air (Tanaka, fig.3 antenna 100.).

Therefore it would have been obvious to one of ordinary skill in the art at the time to which the invention was made to modify US patent claim 1 with the teaching of Tanaka by integrating a local oscillator with a mixer.

The motivation would be to have an up converter (mixer and local oscillator) to be able to transmit the data to the receiver as the prescribed frequency band as configurable.

Allowance of application claim 1 would result in an unjustified time-wise extension of the monopoly granted for the invention defined by US patent claim 1. Therefore, obviousness-type double patenting is appropriate.

Application claim 2 corresponds to US patent claim 2.

Application Claim 3, and US patent claim 4 are both drawn to the same invention, i.e. an ultra wideband radio receiver. These claims differ in scope in that application claim 3 with additional limitations, i.e., a local oscillator for outputting a local signal for frequency-converting the radio wave signal; a mixer for receiving the radio wave signal and the local signal, and frequency-converting the radio wave signal;, is narrower in scope than US patent claim 4.

Tanaka discloses a local oscillator for outputting a local signal for frequency-converting the radio wave signal (Tanaka, (6) “and at 135 a local oscillator for outputting a signal to the mixer circuit above or other components”) ; a mixer for receiving the radio wave signal and the local signal, and frequency-converting the radio wave signal (Tanaka, fig.3 Mixer 153).

Therefore it would have been obvious to one of ordinary skill in the art at the time to which the invention was made to modify US patent claim 4 with the teaching of Tanaka by integrating a local oscillator with a mixer.

The motivation would be to have a down converter (mixer and local oscillator) to be able to receive the data from the receiver as the prescribed frequency band as configurable.

Allowance of application claim 3 would result in an unjustified time-wise extension of the monopoly granted for the invention defined by US patent claim 4. Therefore, obviousness-type double patenting is appropriate.

Application claims 4, 5 and 6 correspond to US patent claim 5, 7 and 8 respectively.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6, are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (Applicant's specification page 1, lines 25-28 and figure 31), and in view of patent number 7,352,806 to Tanaka.

As per claim 1 Applicant Admitted Prior Art (AAPA) teaches an ultra wideband radio transmitter comprising:

a delay time controller for generating a periodic pulse (AAPA, fig.31 component 2 delay time controller), inputting the periodic pulse to a first matched filter (AAPA, fig.31 matched filter 1-1), outputting the periodic pulse to a second matched filter when transmission data has a first level out of 2 logical levels (AAPA, fig.31 matched filter 1-2 and k2), outputting the periodic pulse to a third matched filter when the transmission data has a second level out of the 2 logical levels (AAPA, fig.31 matched filter 1-3 and K3);

the first matched filter for outputting a reference signal that becomes a data decision criterion when the periodic pulse is input thereto (AAPA, fig.31 matched filter 1-1 and output);

the second matched filter for outputting a first data signal a predetermined time ahead of the reference signal when the periodic pulse is input thereto (AAPA, fig.31 matched filter 1-2);

the third matched filter for outputting a second data signal a predetermined time behind the reference signal when the periodic pulse is input thereto (AAPA, fig.31 matched filter 1-3);

an adder for adding up outputs of the first to third matched filters (AAPA, fig.31 component 3 adder);

AAPA does not teach, a local oscillator for outputting a local signal for frequency-converting a corresponding addition signal at a high frequency band or a low frequency band;

a mixer for receiving the addition signal and the local signal, and frequency-converting the corresponding addition signal; and an antenna for receiving the frequency-converted addition signal and radiating the corresponding signal in the air.

Tanaka teaches, a local oscillator for outputting a local signal for frequency-converting a corresponding addition signal at a high frequency band or a low frequency band (Tanaka, fig.3 local oscillator 135); a mixer for receiving the addition signal and the local signal, and frequency-converting the corresponding addition signal (Tanaka, fig.3 mixer 133); and an antenna for receiving the frequency-converted addition signal and radiating the corresponding signal in the air (Tanaka, fig.3 antenna 100).

At the time at which the invention was made it would have been obvious to one of ordinary skill in the art to modify AAPA with the teaching of Tanaka by integrating a local oscillator with a mixer.

The motivation would be to have a down converter (mixer and local oscillator) to be able to receive the data from the receiver as the prescribed frequency band as configurable. Moreover, having a single local oscillator for performing up/down frequency conversion would reduce cost and simplify the manufacturing process.

As per claim 2 AAPA in view of Tanaka teaches, the ultra wideband radio transmitter of claim 1, wherein the reference signal (AAPA, fig.31 K1 reference signal), the first data signal and the second data signal (AAPA, K2 and K3 first and second data signals) each are a pattern signal comprised of several periodic pulses (AAPA, fig.31 is an ultra wideband transceiver transmits in periodic pulses).

As per claim 3, AAPA teaches, an ultra wideband radio receiver comprising:

an antenna for receiving a radio wave signal (Fig. 31, el 6);

a first matched filter for receiving the frequency-converted radio wave signal, and outputting a first output signal when a reference signal that becomes a data decision criterion is detected therefrom (AAPA, fig.31 matched filter 8-1);

a second matched filter for receiving the frequency-converted radio wave signal, and outputting a second output signal when a data signal is detected therefrom (AAPA, fig.31 second matched filter 8-2);

a delay time measurer for detecting which of the first output signal and the second output signal has been first output from the first and second matched filters, and outputting a corresponding detection result (AAPA, fig.31 component 9 the delay time measurer); and

a data decider for receiving the detection result and deciding whether the data signal has a first level or a second level out of 2 logical levels (AAPA, fig.31 component data measurer).

AAPA does not teach a local oscillator for outputting a local signal for frequency-converting the radio wave signal (Tanaka, fig.3 local oscillator 135);
a mixer for receiving the radio wave signal and the local signal, and frequency-converting the radio wave signal (Tanaka, fig.3 mixer 151);

Tanaka teaches, an antenna for receiving a radio wave signal (Tanaka, fig.3 antenna 100); a local oscillator for outputting a local signal for frequency-converting the radio wave signal (Tanaka, fig.3 local oscillator 135); and a mixer for receiving the radio wave signal and the local signal, and frequency-converting the radio wave signal (Tanaka, fig.3 mixer 151);

At the time at which the invention was made it would have been obvious to one of ordinary skill in the art to modify AAPA with the teaching of Tanaka by integrating a local oscillator with a mixer.

The motivation would be to have a down converter (mixer and local oscillator) to be able to receive the data from the receiver as the prescribed frequency band as configurable. Moreover, having a single local oscillator for performing up/down frequency conversion would reduce cost and simplify the manufacturing process.

As per claim 4, AAPA in view of Tanaka teaches, 4 the ultra wideband radio receiver of claim 3, wherein the reference signal (AAPA, fig.31 S1) and the data signal each (AAPA, fig.31 S2) are a pattern signal comprised of several periodic pulses (AAPA, fig.31 is an ultra wideband transceiver transmits in periodic pulses).

As per claim 5, AAPA in view of Tanaka teaches the ultra wideband radio receiver of claim 3, wherein the delay time measurer comprises:

a first circuit for receiving the first output signal and calculating a square value or an absolute value of the corresponding signal (AAPA, fig.31 delay time measurer has two outputs therefore having two circuits outputting Q1 and Q2); and

a second circuit for receiving the second output signal and calculating a square value or an absolute value of the corresponding signal (AAPA, fig.31 delay time measurer has two outputs therefore having two circuits outputting Q1 and Q2).

As per claim 6, AAPA in view of Tanaka teaches, the ultra wideband radio receiver of claim 5, wherein the delay time measurer further comprises:

a first latch for receiving and setting the first output signal (AAPA, fig.31 output of component 9 Q1);

a second latch for receiving and setting the second output signal (AAPA, fig.31 output of component 9 Q2);

a first memory for reading the second output signal by receiving the first output signal (AAPA, fig.31 in order for transmission to happen from digital component to digital component there must be a buffer which is the equivalent of memory);

a second memory for reading the first output signal by receiving the second output signal (AAPA, fig.31 in order for transmission to happen from digital component to digital component there must be a buffer which is the equivalent of memory); and

a reset section for outputting a reset signal by receiving outputs of the first or second latch (AAPA, fig.31 delay time measurer includes a reset after each signal transmission).

3. Claims 7-11, are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (Applicant's specification page 1, lines 25-28 and figure 31), and in view of patent number 7,352,806 to Tanaka.

As per claim 7 Applicant Admitted Prior Art (AAPA) teaches an ultra wideband radio transmitter including a first radio section for performing data communication using a first frequency, a second radio section for performing data communication using a second frequency being different from the first frequency, and an interface section for allocating transmission data to the first and second radio sections, comprising:

an antenna for receiving the frequency-converted addition signal and radiating the corresponding signal in the air (AAPA, fig.31)

the first radio section including (AAPA, fig.31 upper half of figure):

a first delay time controller for generating a periodic pulse by receiving transmission data allocated by the interface (AAPA, fig.31 component 2 and interface shown in figure 30), inputting the periodic pulse to a first matched filter (AAPA, fig.31 K1 going into matched filter 1-1), outputting the periodic pulse to a second matched filter when the transmission data has a first level out of 2 logical levels (AAPA, fig.31 K2 going into matched filter 1-2), and outputting the periodic pulse to a third matched filter when the transmission data has a second level out of the 2 logical levels (AAPA, fig.31 K3 going into matched filter 1-3);

the first matched filter for outputting a reference signal that becomes a data decision criterion when the periodic pulse is input thereto (AAPA, fig.31 matched filter 1-1);

the second matched filter for outputting a first data signal a predetermined time ahead of the reference signal when the periodic signal is input thereto (AAPA, fig.31 matched filter 1-3);

the third matched filter for outputting a second data signal a predetermined time behind the reference signal when the periodic pulse is input thereto (AAPA, fig.31 matched filter 1-3);

a first adder for adding up outputs of the first to third matched filters (AAPA, fig.31 Adder 3); and a first antenna for receiving a corresponding addition signal and radiating the addition signal in the air (AAPA, fig.31 Antenna);

AAPA does not disclose the 2^{nd} radio section including a second delay time controller for generating a periodic pulse by receiving transmission data allocated by the interface, inputting the periodic pulse to a third matched filter, outputting the periodic pulse to a fourth matched filter when the transmission data has a first level out of 2 logical levels, and outputting the periodic pulse to a fifth matched filter when the transmission data has a second level out of the 2 logical levels; the third matched filter for outputting a reference signal that becomes a data decision criterion when the periodic pulse is input thereto, the fourth matched filter for outputting a first data signal a predetermined time ahead of the reference signal when the periodic signal is input thereto; the fifth matched filter for outputting a second data signal a predetermined time behind the reference signal when the periodic pulse is input thereto; a 2nd adder forbadding up outputs of the 3rd to 5th matched filters.

However, in order for the AAPA system to increase the number of frequencies transmitting and receiving. One of ordinary skill in the art, at the time the invention was made, would modify AAPA system by adding 2nd radio section with a plurality of extra receiver or transmitter circuits, as claimed.

The motivation would increase the number of frequencies as needed.

AAPA does not discloses a local oscillator for outputting a local signal for frequency-converting a corresponding addition signal from the first frequency to the second frequency; a mixer for receiving the addition signal and the local signal, and frequency-converting the addition signal.

Tanaka teaches, a local oscillator for outputting a local signal for frequency-converting a corresponding addition signal from the first frequency to the second frequency (Tanaka, fig.3 Local oscillator 135); a mixer for receiving the addition signal and the local signal, and frequency-converting the addition signal (Tanaka, fig.3 mixer 133); and an antenna for receiving the frequency-converted addition signal and radiating the corresponding signal in the air (Tanaka, fig.3 antenna 100).

At the time at which the invention was made it would have been obvious to one of ordinary skill in the art to modify AAPA with the teaching of Tanaka by integrating a local oscillator with a mixer.

The motivation would be to have a down converter (mixer and local oscillator) to be able to receive the data from the receiver as the prescribed frequency band as configurable.

As per claim 8, AAPA teaches, an ultra wideband radio receiver including a first radio section for performing data communication using a first frequency and a second radio section for performing data communication using a second frequency being different from the first frequency, comprising:

A first antenna for receiving a radio wave signal (Fig. 31, el. 6) and outputting the received radio wave signal to a first matched filter and a second matched filter (AAPA, fig.31 matched filters 8-1 and 8-2);

the first matched filter for receiving a signal from the first antenna (AAPA, fig.31 8-1 matched filter), and outputting a first output signal when a reference signal that becomes a data decision criterion is detected therefrom (AAPA, fig.31 8-1 matched filter);

the second matched filter for receiving a signal from the first antenna, and outputting a second output signal when a data signal is detected therefrom (AAPA, fig.31 8-2 matched filter);

a first delay time measurer for detecting which of the first output signal and the second output signal has been first output from the first and second matched filters (AAPA, fig.31 Component 9 delay time measurer), and outputting a corresponding detecting result; and

a first data decider for receiving the detection result and deciding whether the data signal has a first level or a second level out of 2 logical levels (AAPA, fig.31 component 10 data measurer);

AAPA does not disclose the 2nd radio section including a local oscillator for outputting a local signal for frequency-converting the radio wave signal a second antenna for receiving a radio wave signal a third matched filter for receiving the frequency-converted radio wave signal, and outputting the first output signal when a reference signal that becomes a data decision criterion is detected therefrom; a fourth matched filter for receiving the frequency-converted radio wave signal, and outputting the second output signal when a data signal is detected therefrom; a second delay time measurer for detecting which of the first output signal and the second output signal has first been output from the third and fourth matched filters, and outputting a corresponding detection result; and a second data decider for receiving the detecting result, and deciding whether the data signal has a first level or a second level out of 2 logical levels.

However, in order for the AAPA system to increase the number of frequencies transmitting and receiving. One of ordinary skill in the art, at the time the invention was made, would modify AAPA system by adding a plurality of extra receiver or transmitter circuits, i.e., a second radio section duplicated from Fig. 31.

The motivation would increase the number of frequencies as needed.

AAPA does not discloses a local oscillator for outputting a local signal for frequency-converting the radio wave signal in the 2nd radio section (Tanaka, fig.3 Local oscillator 135) ; a mixer for receiving the radio wave signal , and the local signal and frequency-converting the radio wave signal (Tanaka, fig.3 mixer 133) ;

Tanaka discloses a local oscillator for outputting a local signal for frequency-converting the radio wave signal in the 2nd radio section (Tanaka, fig.3 Local oscillator 135) ; a mixer for receiving the radio wave signal , and the local signal and frequency-converting the radio wave signal (Tanaka, fig.3 mixer 133) ;

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify AAPA by integrating a local oscillator with mixers within the 2nd radio section, as taught by Tanka,

The motivation would be to have a down converter (mixer and local oscillator) to be able to receive the data from the receiver as the prescribed frequency band as configurable.

As per claim 9, AAPA teaches an ultra wideband radio transmitter including a first radio section for performing data communication using a first frequency, a second radio section for performing data communication using a second frequency being different from the first frequency, and an interface for allocating transmission data to the first and second radio sections, comprising:

the first radio section including (AAPA, fig.31 component 2 delay time controller);

a first delay time controller for generating a periodic pulse by receiving transmission data allocated by the interface (AAPA, fig.31 component 2 delay time controller), inputting the periodic pulse to a first matched filter (AAPA, fig.31 matched filter 1-1), output-ring the periodic pulse to a second matched filter when the transmission data has a first level out of 2 logical levels (AAPA, fig.31 matched filter 1-2), and outputting the periodic pulse to a third matched filter when the transmission data has a second level of the 2 logical levels (AAPA, fig.31 matched filter 1-3);

the first matched filter for outputting a reference signal that becomes a data decision criterion when the periodic pulse is input thereto (AAPA, fig.31 output of matched filter 1-1);

the second matched filter for outputting a first data signal a predetermined time ahead of the reference signal when the periodic pulse is input thereto (AAPA, fig.31 output of matched filter 1-2);

the third matched filter for outputting a second data signal a predetermined time behind the reference signal when the periodic pulse is input thereto (AAPA, fig.31 output of matched filter 1-3);

a first adder for adding up outputs of the first to third matched filters; and a first antenna for receiving a corresponding addition signal, and radiating the addition signal in the air (AAPA, fig.31 Antenna 6); and a 1st antenna for receiving a corresponding addition signal, and radiating the additional in the air (see AAPA; Fig. 31).

AAPA does not disclose the 2nd radio section including a second delay time controller for generating a periodic pulse by receiving transmission data allocated by the interface, inputting the periodic pulse to a third matched filter, outputting the periodic pulse to a fourth matched filter when the transmission data has a first level out of 2 logical levels, and outputting the periodic pulse to a fifth matched filter when the transmission data has a second level out of the 2 logical levels; the third matched filter for outputting a reference signal that becomes a data decision criterion when the periodic pulse is input thereto, the fourth matched filter for outputting a first data signal a predetermined time ahead of the reference signal when the periodic signal is input thereto; the fifth matched filter for outputting a second data signal a predetermined time behind the reference signal when the periodic pulse is input thereto; a 2nd adder forbadding up outputs of the 3rd to 5th matched filters.

AAPA further does not discloses a local oscillator for outputting a local signal for frequency-converting a corresponding additional signal from the 1st frequency to the 2nd frequency and a mixer for receiving the additional signal, frequency-converting the additional signal and outputting the frequency-converted addition signal to the 1st antenna.

However, in order for the AAPA system to increase the number of frequencies transmitting and receiving. One of ordinary skill in the art, at the time the invention was made, would modify AAPA system by adding 2^{nd} radio section with a plurality of extra receiver or transmitter circuits, as claimed.

The motivation would increase the number of frequencies as needed.

AAPA further does not discloses a local oscillator for outputting a local signal for frequency-converting a corresponding additional signal from the 1^{st} frequency to the 2^{nd} frequency and a mixer for receiving the additional signal, frequency-converting the additional signal and outputting the frequency-converted addition signal to the 1^{st} antenna.

Tanaka discloses a local oscillator for outputting a local signal for frequency-converting the radio wave signal in the 2^{nd} radio section (Tanaka, fig.3 Local oscillator 135) ; a mixer for receiving the radio wave signal, and the local signal and frequency-converting the radio wave signal and outputting the frequency-converted addition signal to the antenna (Tanaka, fig.3 mixer 133).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify AAPA by integrating a local oscillator with mixers within the 2^{nd} radio section, as taught by Tanaka,

The motivation would be to have a down converter (mixer and local oscillator) to be able to receive the data from the receiver as the prescribed frequency band as configurable.

As per claim 10, AAPA teaches an ultra wideband radio receiver including a first radio section for performing data communication using a first frequency and a second radio section for performing data communication using a second frequency being different from the first frequency, comprising:

a first antenna for receiving a radio wave signal (AAPA, fig. 31 Antenna 6) and outputting the received radio wave signal to a first matched filter (AAPA, fig.31 matched filter 8-1), a second matched filter (AAPA, fig.31 matched filter 8-2), in the second radio section (Analyzed in claim 7);

the first matched filter for receiving a signal from the first antenna (AAPA, fig.31 matched filter 8-1 is receiving the signal from antenna 6), and outputting a first output signal when a reference signal that becomes a data decision criterion is detected therefrom (AAPA, fig.31 output of matched filter 8-1 S1);

the second matched filter for receiving a signal from the first antenna, and outputting a second output signal when a data signal is detected therefrom (AAPA, fig.31 matched filter 8-2);

a first delay time measurer for detecting which of the first output signal and the second output signal has been first output from the first and second matched filters (AAPA, fig.31 component 9 delay time measurer), and outputting a corresponding detecting result (AAPA, fig.31output of delay time measurer Q1 and Q2); and

a first data decider for receiving the detection result, and deciding whether the data signal has a first level or a second level out of 2 logical levels (AAPA, fig.31 component 10 data measurer);

AAPA does not discloses the second radio section including a local oscillator for outputting a local signal for frequency-converting a radio wave signal received from the 1st antenna; a mixer for receiving the radio wave signal from the 1st antenna and the local signal and frequency-converting the radio wave signal.

a third matched filter for receiving the frequency-converted radio wave signal, and outputting the first output signal when a reference signal that becomes a data decision criterion is detected therefrom;

a fourth matched filter for receiving the frequency-converted radio wave signal, and outputting the second output signal when a data signal is detected therefrom;

a second delay time measurer for detecting which of the first output signal and the second output signal has first been output from the third and fourth matched filters, and outputting a corresponding detection result; and

a second data decider for receiving the detecting result, and deciding whether the data signal has a first level or a second level out of 2 logical levels.

However, in order for the AAPA system to increase the number of frequencies transmitting and receiving. One of ordinary skill in the art, at the time the invention was made, would modify AAPA system by adding 2nd radio section with a plurality of extra receiver or transmitter circuits, as claimed.

The motivation would increase the number of frequencies as needed.

AAPA does not discloses a local oscillator for outputting a local signal for frequency-converting a radio wave signal received from the 1st antenna; a mixer for receiving the radio wave signal from the 1st antenna and the local signal and frequency-converting the radio wave signal.

Tanaka discloses a local oscillator for outputting a local signal for frequency-converting a radio wave signal received from the 1st antenna (Tanaka, fig.3 Local oscillator 135) ; a mixer for receiving the radio wave signal from the 1st antenna and the local signal and frequency-converting the radio wave signal (Tanaka, fig.3 mixer 133).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify AAPA by integrating a local oscillator with mixers within the 2nd radio section, as taught by Tanaka,

The motivation would be to have a down converter (mixer and local oscillator) to be able to receive the data from the receiver as the prescribed frequency band as configurable.

As per claim 11, AAPA teaches an ultra wideband radio communication method characterized in that

in an ultra wideband radio transmitter,

a delay time controller generates a periodic pulse (AAPA, fig.31 component 2 delay time controller), inputs the periodic pulse to a first matched filter (AAPA, fig.31 matched filter 1-1 input), outputs the periodic pulse to a second matched filter when transmission data has a first level out of 2 logical levels (AAPA, fig.31 matched filter 1-2), and outputs the periodic pulse to a third matched filter when the transmission data has a second level out of 2 logical levels (AAPA, fig.31 matched filter 1-3);

the first matched filter outputs a reference signal that becomes a data decision criterion when the periodic pulse is input thereto (AAPA, fig.31 matched filter 1-1 output);

the second matched filter outputs a first data signal a predetermined time ahead of the reference signal when the periodic pulse is input thereto (AAPA, fig.31 matched filter 1-2);

the third matched filter outputs a second data signal a predetermined time behind the reference signal when the periodic pulse is input thereto (AAPA, fig.31 matched filter 1-3);

an adder adds up outputs of the first to third matched filters (AAPA, fig.31 component 3 adder);

an antenna receives the frequency-converted addition signal and radiate over the air (AAPA; Fig. 31, el. 6) and in an ultra wideband radio receiver (AAPA, fig.31 bottom half of figure),

an antenna for receiving a radio wave signal and outputs the corresponding signal (AAPA, fig. 31 Antenna 6)

a fourth matched filter receives the frequency-converted radio wave signal, and outputs a first output signal when a reference signal that becomes a data decision criterion is detected therefrom (AAPA, fig.31 matched filter 8-1 and output S1);

a fifth matched filter receives the frequency-converted radio wave signal, and outputs a second output signal when a data signal is detected therefrom (AAPA, fig.31 matched filter 8-2 and output S2);

a delay time measurer detects which of the first output signal and the second output signal has been first output from the fourth and fifth matched filters, and outputs a corresponding detection result (AAPA, fig.31 delay time measurer); and

a data decider receives the detection result, and decides whether the data signal has a first level or a second level out of 2 logical levels (AAPA, fig.31 data measurer component 10).

AAPA does not teach, a local oscillator outputs a local signal for frequency-converting a corresponding addition signal at a high frequency band or a low frequency band; a mixer receives the addition signal and the local signal, and frequency- converts the addition signal, and an antenna for receiving the additional signal and outputs the corresponding signal to the mixer.

Tanaka teaches, a local oscillator outputs a local signal for frequency-converting a corresponding addition signal at a high frequency band or a low frequency band (Tanaka, component 135 local oscillator); a mixer receives the addition signal and the local signal, and frequency- converts the addition signal (Tanaka, component 135 local oscillator connected to mixer 133) ; and an antenna receives the addition signal (Tanaka, antenna 100) and outputs the corresponding signal to a mixer (Tanaka, mixer 151); the mixer receives the addition signal and a local signal that a local oscillator outputs to frequency-convert the addition signal, and frequency converts the addition signal (Tanaka, fig.3 showing connection from local oscillator to mixer 151);

The motivation would be to have a down converter (mixer and local oscillator) to be able to receive the data from the receiver as the prescribed frequency band as configurable.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SANTIAGO GARCIA whose telephone number is (571)270-5182. The examiner can normally be reached on MONDAY- FRIDAY 7:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pankaj Kumar can be reached on (571) 272-3011. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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05/11/2009
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